REMARKS

In view of the preceding amendments and the comments which follow, and pursuant to 37 C.F.R. § 1.111, amendment and reconsideration of the Official Action of July 3, 2003 is respectfully requested by Applicants.

Summary

Claims 3 - 6 stand rejected. Claims 3 – 6 are amended. No new matter has been introduced as a result of these amendments.

Claims 3 - 6 are pending following entry of the present amendments.

Rejection under 35 U.S.C. § 103

The Examiner has rejected claims 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Ju et al. (U.S. 5,285,340) in view of Fahy et al. (U.S. 4,345,007). These claim rejections are respectfully traversed. Claims 3 and 4 have nevertheless been amended to clarify the claimed invention and to remove any ambiguity that may have been the basis for the rejections. In particular, independent claim 3, directed to a method for making a thin-film magnetic head, has been rewritten to further recite that "wherein the thin-film magnetic head is not annealed , and the gap layer is formed using NiP having a P content in the range of 11 mass percent to 14 mass percent."

The Examiner states that Ju et al. patent is directed to a thin-film magnetic head, having an electroplated NiP nonmagnetic gap layer, which is subjected to hard baking. More specifically, Ju et al. disclose that "The layer 42 is then hard baked (FIG.9D) to form the first layer of insulation 30 and in this case the insulation 30 is self-aligned to the back edge 46 of the pole tip assembly 15 which established the zero throat position"(column 5, lines 28 – 32). Further, the Examiner indicates that Fahy et al. patent is directed to the electro-deposition of a nonmagnetic coating on a memory wire, with the nonmagnetic coating being NiP with a Phosphorous (P) content of 8 to 15 mass percent. As stated in Fahy et al., the phosphorous content of the coating is

approximately 15 percent, and that alloy compositions having less than 8 percent phosphorous exhibit a dull surface quality and are magnetic (column 4, lines 6 – 9). Thus, for Fahy et al. the phosphorous content of the electrodeposited alloy has to stay well above the 8 percent level, and preferably remain around 10 to 15 percent (column 4, lines 12 – 13).

The Examiner deducts that a combination of these two references may lead one of ordinary skill in the art at the time of the invention to utilize the electrodeposition technique of Fahy et al. to form the NiP layer of Ju et al, with a phosphorous content in the range taught by Fahy et al. That is, the combination of these two references may lead to a thin-film magnetic head which is hard baked and has an electroplated NiP nonmagnetic gap layer with the NiP layer having a P content of 8 to 15 mass percent. However, Ju et al. and Fahy et al. do not disclose or suggest a relationship between the nonmagnetic characteristics of the NiP material in the specific P content and the hard baking (annealing) temperature. That is, a mere combination of these two references does not necessarily teach that the P content does remain in the 8 to 15 mass percent interval, and thus that the NiP layer remains nonmagnetic when the thin-film magnetic head is annealed. Hence, these two references does not disclose or suggest that after the annealing step the NiP coating would retain its nonmagnetic characteristics. Thus, claim 3 is not rendered unpatentable by Ju et al. and Fahy et al, either singly or in combination with each other. Applicants therefore respectfully request that the rejection under 35 USC 103(a) be withdrawn.

Claim 4, rendered independent by the present amendment, now further includes a step reciting that "annealing the thin film magnetic head at a temperature of at least 200^0 C" and concludes with "wherein the gap layer is formed using NiP having a P content in the range of 12.5 mass percent to 14 mass percent." Thus, the present invention discloses a method for making a thin-film magnetic head that comprises a step of annealing the thin-film magnetic head at a temperature of at least 200^0 C, and establishes a

relationship between the nonmagnetic characteristics of the NiP layer with a specific P content and the annealing temperature. In contrast, as discussed above in regard to claim 3, Ju et al and Fahy et al. do not suggest or disclose such relationship. More specifically, that the NiP layer of the thin-film magnetic head would maintain its nonmagnetic characteristics after the annealing step. Thus, claim 4 is not rendered unpatentable by Ju et al. and Fahy et al., either singly or in combination with each other. Applicants therefore respectfully request that the rejection of claim 4 under 35 USC 103(a) be withdrawn

Applicants submit that claims 5 and 6, now dependent on allowable base claims 3 and 4 respectively, are also allowable, and respectfully request that their rejection be withdrawn.

Conclusion

Applicants submit that this application is now in condition for allowance, and favorable reconsideration of this application in view of the above amendments and remarks is respectfully requested. Allowance of claims 3 - 6 at an early date is earnestly solicited. If, there are additional fees due, Applicants request that this paper constitutes any necessary petition and authorizes the Commissioner to charge any underpayment, or credit any overpayment, to Deposit Account No. 23-1925.

If the examiner finds that there are any outstanding issues which may be resolved by a telephone interview, the Examiner is invited to contact the undersigned at the below listed number

Respectfully submitted,
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